Practice: 533 - Pumping Plant

Scenario # 1 Wastewater Pump < 1 Hp

Scenario Description: **Missouri**

Scenario is for the implentation of a electric chopper screw pump of less than 1 horsepower. Implementation examples include, but are not limited to, pumping wastewater from the source to a storage facility such as in a dairy milk parlor, or pumping supernatant from the sump of a settling basin to a level spreader device upstream of a Vegetated Treatment Area, in flat topography where gravity flow from the settling basin is not feasible. Payment includes the pump and controls, installation and concrete pad base for the pump. Associated Practices include: 374 - Farmstead Energy Improvement; 313 - Waste Storage Facility; 634 - Waste Transfer; 633 Waste Utilization; 632 Solid/liquid Waste Separation Facility; 635 Vegetated Treatment Area

Before Practice Situation:

Dairy milk parlor wastewater is not managed properly, or feedlot runoff enters a nearby stream, causing water quality concerns through excessive nutrients, organics, and pathogen. The resource concerns to be addressed are for water quality, air quality, and domestic animal health.

After Practice Situation:

Practice typically installed for transfer of wastewater to a storage facility using 3/4 HP chopper/screw pump. Dairy milk parlor wastewater is directed to a waste storage facility, or feedlot runoff is directed to a solid/liquid settling basin, and supernatant is pumped from the sump of the settling basin to a Vegetated Treatment Area. Contaminated water no longer enters the stream. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

Per Pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$1,018.05

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Equip./Install.	Concrete, CIP, slab on grade, reinforced	0.25	Cubic yard	$253.20	$63.30
Materials	Pump, Chopper, Screw, ≤ 1 HP, includes pump	0.75	Horsepower	$1,273.00	$954.75
				Total Cost:	$1,018.05

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$763.54	EQIP-HU	$916.25
EQIP-NOI	$763.54	EQIP-HUNOI	$916.25
EQIP-NOFEI	$763.54	EQIP-HUNOFEI	$916.25
EQIP-CCPI	$763.54	EQIP-HUCCPI	$916.25
EQIP-MRBI	$763.54	EQIP-HUMRBI	$916.25

Practice: 533 - Pumping Plant

Scenario # 2 Wastewater Pump 1-5 Hp

Scenario Description: **Missouri**

Scenario is for the implentation of a electric chopper screw pump of 1-5 horsepower. Implementation examples include, but are not limited to, pumping wastewater from the source to a storage facility such as in a dairy milk parlor, or pumping supernatant from the sump of a settling basin to a level spreader device upstream of a Vegetated Treatment Area, in flat topography where gravity flow from the settling basin is not feasible. Payment includes the pump and controls, installation and concrete pad base for the pump. Associated Practices include: 374 - Farmstead Energy Improvement; 313 - Waste Storage Facility; 634 - Waste Transfer; 633 Waste Utilization; 632 Solid/liquid Waste Separation Facility; 635 Vegetated Treatment Area

Before Practice Situation:

Dairy milk parlor wastewater is not managed properly, or feedlot runoff enters a nearby stream, causing water quality concerns through excessive nutrients, organics, and pathogen. The resource concerns to be addressed are for water quality, air quality, and domestic animal health.

After Practice Situation:

Practice typically installed for transfer of wastewater to a storage facility using 3 HP chopper/screw pump. Dairy milk parlor wastewater is directed to a waste storage facility, or feedlot runoff is directed to a solid/liquid settling basin, and supernatant is pumped from the sump of the settling basin to a Vegetated Treatment Area. Contaminated water no longer enters the stream. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

Per Pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$2,958.30

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pump, Chopper, Screw, >1 to 3 HP, includes	3	Horsepower	$965.00	$2,895.00
Equip./Install.	Concrete, CIP, slab on grade, reinforced	0.25	Cubic yard	$253.20	$63.30
				Total Cost:	$2,958.30

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$2,218.73	EQIP-HU	$2,662.47
EQIP-NOI	$2,218.73	EQIP-HUNOI	$2,662.47
EQIP-NOFEI	$2,218.73	EQIP-HUNOFEI	$2,662.47
EQIP-CCPI	$2,218.73	EQIP-HUCCPI	$2,662.47
EQIP-MRBI	$2,218.73	EQIP-HUMRBI	$2,662.47

Practice: 533 - Pumping Plant

Scenario # 3 Manure Pump >5 Hp

Scenario Description: **Missouri**

Scenario is for the implentation of a electric chopper screw pump of >5 horsepower to pump manure from the source to a storage facility. Implementation examples include, but are not limited to, situations where a dairy or swine operation is pumping manure to an above ground storage facility. Payment includes the pump and controls, installation and concrete pad. Associated Practices include: 374 - Farmstead Energy Improvement; 313 - Waste Storage Facility; 634 - Waste Transfer; 633 Waste Utilization; 632 Solid/liquid Waste Separation Facility; 635 Vegetated Treatment Area

Before Practice Situation:

Manure is not managed properly, or feedlot runoff enters a nearby stream, causing water quality concerns through excessive nutrients, organics, and pathogen. The resource concerns to be addressed are for water quality, air quality, and domestic animal health.

After Practice Situation:

Practice typically installed for transfer of manure to a storage facility using 10 HP chopper/screw pump. Manure is directed to a waste storage facility, or feedlot runoff is directed to a solid/liquid settling basin, and supernatant is pumped from the sump of the settling basin to a Vegetated Treatment Area. Contaminated water no longer enters the stream. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

Per Pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$7,063.30

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pump, Chopper, Screw, >7 to 15 HP, includes	10	Horsepower	$700.00	$7,000.00
Equip./Install.	Concrete, CIP, slab on grade, reinforced	0.25	Cubic yard	$253.20	$63.30
				Total Cost:	$7,063.30

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$5,297.48	EQIP-HU	$6,356.97
EQIP-NOI	$5,297.48	EQIP-HUNOI	$6,356.97
EQIP-NOFEI	$5,297.48	EQIP-HUNOFEI	$6,356.97
EQIP-CCPI	$5,297.48	EQIP-HUCCPI	$6,356.97
EQIP-MRBI	$5,297.48	EQIP-HUMRBI	$6,356.97

Practice: 533 - Pumping Plant

Scenario # 4 Small Wastewater Fuel Driven Pump ≤ 50 Hp

Scenario Description: **Missouri**

Scenario is for the implentation of a fuel or PTO-driven pump of ≤ 50 horsepower for transferring manure or wastewater. Implementation examples include, but are not limited to, pumping wastewater from a storage facility to an end use such as a field, or transferring manure and wastewater from a shallow pit under a hog confinement building to a deep pit manure storage on the headquarters site. Payment includes all controls and appurtenances needed to mount the pump and connect the pump to the piping system. The piping system and any associated reception tank is specified under 634 - Waste Transfer. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Associated Practices include: 374 - Farmstead Energy Improvement; 313 - Waste Storage Facility; 634 - Waste Transfer

Before Practice Situation:

Various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Practice Situation:

For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Scenario Feature Measure:

Per Pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$8,263.30

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pump, < 50 HP, Pump & ICE power unit	40	Horsepower	$205.00	$8,200.00
Equip./Install.	Concrete, CIP, slab on grade, reinforced	0.25	Cubic yard	$253.20	$63.30
				Total Cost:	$8,263.30

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$6,197.48	EQIP-HU	$7,436.97
EQIP-NOI	$6,197.48	EQIP-HUNOI	$7,436.97
EQIP-NOFEI	$6,197.48	EQIP-HUNOFEI	$7,436.97
EQIP-CCPI	$6,197.48	EQIP-HUCCPI	$7,436.97
EQIP-MRBI	$6,197.48	EQIP-HUMRBI	$7,436.97

Practice: 533 - Pumping Plant

Scenario # 5 Large Wastewater Fuel Driven Pump > 50 Hp

Scenario Description: **Missouri**

Scenario is for the implentation of a fuel or PTO-driven pump of >50 horsepower for transferring manure or wastewater. Implementation examples include, but are not limited to, moving wastewater from a waste holding pond to a dragline field application system, supplying wastewater to a sprinkler irrigation system, or any other transfer of wasterwater from a storage facility to an end use. Includes all controls and appurtenances needed to mount the pump and connect the pump to the piping system. The piping system and any associated reception tank is specified under 634 - Waste Transfer. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters Associated Practices include: 374 - Farmstead Energy Improvement; 313 - Waste Storage Facility; 634 - Waste Transfer

Before Practice Situation:

Various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Practice Situation:

For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Scenario Feature Measure:

Per Pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$12,133.30

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pump, > 70 HP, Pump & ICE power unit	85	Horsepower	$142.00	$12,070.00
Equip./Install.	Concrete, CIP, slab on grade, reinforced	0.25	Cubic yard	$253.20	$63.30
				Total Cost:	$12,133.30

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$9,099.98	EQIP-HU	$10,919.97
EQIP-NOI	$9,099.98	EQIP-HUNOI	$10,919.97
EQIP-NOFEI	$9,099.98	EQIP-HUNOFEI	$10,919.97
EQIP-CCPI	$9,099.98	EQIP-HUCCPI	$10,919.97
EQIP-MRBI	$9,099.98	EQIP-HUMRBI	$10,919.97

Practice: 533 - Pumping Plant

Scenario # 6 Solar

Scenario Description: **Missouri**

The scenario is for the installation of a solar panel array, pump, pressure tank, and appurtenances in a well for supplying water to livestock in situations where standard electric power is inaccessible The installation includes the pump, wiring, drop pipe, solar panels, mounts, inverter, and all appurtenances. Payment does not include battery backup. Associated Practices include: 516 - Livestock Pipeline; 642 Water Well, 528 Prescribed Grazing and, 614 - Watering Facility.

Before Practice Situation:

Practice to be installed on grazing land. Current conditions include inadequate water supply, poor water quality, degraded site condtions leading to erosion concerns, poor grazing distribution, and poor livestock health. The resource concerns to be addressed are Inadequate supply of water, grazing distribution, and degraded site conditions leading to poor animal health.

After Practice Situation:

The typical scenario assumes installation of a 200-watt photovoltaic (PV) panel. The installation includes the pump, wiring, pipeline in the well, solar panels, frame mounts, inverter, and all appurtenances. Water will be pumped to an existing storage tank at a higher elevation from which it will be used to pressurize the Livestock Pipeline (516) or Irrigation Pipeline (430). Grazing - Livestock exclusion from surface water will result in improved surface water quality and reduced erosion.

Scenario Feature Measure:

Pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$3,320.27

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pressure Tank, 40 gallon	1	Each	$264.00	$264.00
Materials	Solar Panels, fixed cost portion	1	Each	$2,155.70	$2,155.70
Materials	Solar Panels, variable cost portion	0.2	Kilowatt	$3,337.70	$667.54
Materials	Pump, < 5 HP - Pump and motor, variable cost	0.25	Horsepower	$229.73	$57.43
Materials	Pump, < 5 HP - Pump and motor, fixed cost	1	Each	$175.60	$175.60
				Total Cost:	$3,320.27

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$2,490.20	EQIP-HU	$2,988.25
EQIP-NOI	$2,490.20	EQIP-HUNOI	$2,988.25
EQIP-MRBI	$2,490.20	EQIP-HUMRBI	$2,988.25
EQIP-CCPI	$2,490.20	EQIP-HUCCPI	$2,988.25

Practice: 533 - Pumping Plant

Scenario # 7 Livestock Water, Shallow Well Pump (≤ 25 ft deep)

Scenario Description: **Missouri**

The scenario is for the installation of a pump and pressure tank in a shallow well (≤ 25 feet deep) or collection for supplying water to livestock. Associated practices: 528 Prescribed Grazing, 516 Pipeline, 614 Watering Facility, 642 Water Well; 574 Spring Development

Before Practice Situation:

Practice to be installed on grazing land. Current conditions include inadequate water supply, poor water quality, degraded site condtions leading to erosion concerns, poor grazing distribution, and poor livestock health. The resource concerns to be addressed are Inadequate supply of water, grazing distribution, and degraded site conditions leading to poor animal health.

After Practice Situation:

Practice typically installed for 30 animal units and consists of installing a centrifigal pump, pressure tank, and appurtenances for a shallow draw watering system. Conservation benefits of the installation is proper grazing distribution, which will allow a degraded site to be restored. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

per pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$669.33

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pump, < 5 HP - Pump and motor, fixed cost	1	Each	$175.60	$175.60
Materials	Pressure Tank, 40 gallon	1	Each	$264.00	$264.00
Materials	Pump, < 5 HP - Pump and motor, variable cost	1	Horsepower	$229.73	$229.73
				Total Cost:	$669.33

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$502.00	EQIP-HU	$602.40
EQIP-NOI	$502.00	EQIP-HUNOI	$602.40
EQIP-NOFEI	$502.00	EQIP-HUNOFEI	$602.40
EQIP-CCPI	$502.00	EQIP-HUCCPI	$602.40
EQIP-MRBI	$502.00	EQIP-HUMRBI	$602.40

Practice: 533 - Pumping Plant

Scenario # 8 Livestock Water, Shallow Well Pump (≤ 25ft deep) with Pump House

Scenario Description: **Missouri**

The scenario is for the installation of a pump and pressure tank in a shallow well (≤25 feet deep) or collection for supplying water to livestock. Payment also includes a pump house installed either above ground or buried for situations where there is not an existing sheltered location for the pump to be installed. Scenario is for pump houses of ≤ 140 cu ft volume. Associated practices: 528 Prescribed Grazing, 516 Pipeline, 614 Watering Facility, 642 Water Well; 574 Spring Development.

Before Practice Situation:

Practice to be installed on grazing land. Current conditions include inadequate water supply, poor water quality, degraded site condtions leading to erosion concerns, poor grazing distribution, and poor livestock health. The resource concerns to be addressed are Inadequate supply of water, grazing distribution, and degraded site conditions leading to poor animal health.

After Practice Situation:

Practice typically installed for 30 animal units and consists of installing a centrifigal pump, pressure tank, and appurtenances for a shallow draw watering system. A 5' x 4' x 5' (100 cu ft) concrete pump house is installed above ground on a 8' x 8' x 1' gravel pad. Conservation benefits of the installation is proper grazing distribution, which will allow a degraded site to be restored. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

per pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$1,667.39

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pumping Plant Pit, Concrete, 1200 Gallon	0.6	Each	$1,329.72	$797.83
Materials	Pressure Tank, 40 gallon	1	Each	$264.00	$264.00
Materials	Pump, < 5 HP - Pump and motor, fixed cost	1	Each	$175.60	$175.60
Materials	Pump, < 5 HP - Pump and motor, variable cost	1	Horsepower	$229.73	$229.73
Materials	Aggregate, Gravel, Graded	2.4	Cubic yard	$24.76	$59.42
Equip./Install.	Truck, Pickup	2	Hour	$27.28	$54.56
Labor	General Labor	4	Hour	$21.56	$86.24
				Total Cost:	$1,667.39

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$1,250.54	EQIP-HU	$1,500.65
EQIP-NOI	$1,250.54	EQIP-HUNOI	$1,500.65
EQIP-NOFEI	$1,250.54	EQIP-HUNOFEI	$1,500.65
EQIP-CCPI	$1,250.54	EQIP-HUCCPI	$1,500.65
EQIP-MRBI	$1,250.54	EQIP-HUMRBI	$1,500.65

Practice: 533 - Pumping Plant

Scenario # 9 **Livestock Water, Deep Well Pump (>25 ft deep)**

Scenario Description: **Missouri**

The scenario is for the installation of a pump and pressure tank in a deep well (> 25 feet) or sump for supplying water to livestock. Associated practices: 528 Prescribed Grazing, 516 Pipeline, 614 Watering Facility, 642 Water Well

Before Practice Situation:

Practice to be installed on grazing land. Current conditions include inadequate water supply, poor water quality, degraded site condtions leading to erosion concerns, poor grazing distribution, and poor livestock health. The resource concerns to be addressed are Inadequate supply of water, grazing distribution, and degraded site conditions leading to poor animal health.

After Practice Situation:

Practice typically installed for 30 animal units and consists of installing a jet or submersible pump, pressure tank, and appurtenances for a watering system. When utilizing a pond or stream a sump will be installed and used rather than a well. Conservation benefits of the installation is proper grazing distribution, which will allow a degraded site to be restored. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

per pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$1,379.20

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pressure Tank, 80 gallon	1	Each	$859.00	$859.00
Materials	Pump, < 5 HP - Pump and motor, variable cost	1.5	Horsepower	$229.73	$344.60
Materials	Pump, < 5 HP - Pump and motor, fixed cost	1	Each	$175.60	$175.60
				Total Cost:	$1,379.20

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$1,034.40	EQIP-HU	$1,241.28
EQIP-NOI	$1,034.40	EQIP-HUNOI	$1,241.28
EQIP-NOFEI	$1,034.40	EQIP-HUNOFEI	$1,241.28
EQIP-CCPI	$1,034.40	EQIP-HUCCPI	$1,241.28
EQIP-MRBI	$1,034.40	EQIP-HUMRBI	$1,241.28

Practice: 533 - Pumping Plant

Scenario # 10 Livestock Water, Deep Well Pump (> 25ft deep) with Pump House

Scenario Description: **Missouri**

The scenario is for the installation of a pump and pressure tank in a deep well (> 25 feet) or sump for supplying water to livestock. Payment also includes a pump house installed either above ground or buried for situations where there is not an existing sheltered location for the pump to be installed. Scenario is for pump houses of ≤ 140 cu ft volume. Associated practices: 528 Prescribed Grazing, 516 Pipeline, 614 Watering Facility, 642 Water

Before Practice Situation:

Practice to be installed on grazing land. Current conditions include inadequate water supply, poor water quality, degraded site condtions leading to erosion concerns, poor grazing distribution, and poor livestock health. The resource concerns to be addressed are Inadequate supply of water, grazing distribution, and degraded site conditions leading to poor animal health.

After Practice Situation:

Practice typically installed for 30 animal units and consists of installing a jet or submersible pump, pressure tank, and appurtenances for a watering system. A 5' x 4' x 5' (100 cu ft) concrete pump house is installed above ground on a 8' x 8' x 1' gravel pad. Conservation benefits of the installation is proper grazing distribution, which will allow a degraded site to be restored. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

Scenario Feature Measure:

per pump

Scenario Typical Size:	1	Each	Tot Unit Cost	$2,377.25

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Pumping Plant Pit, Concrete, 1200 Gallon	0.6	Each	$1,329.72	$797.83
Materials	Pressure Tank, 80 gallon	1	Each	$859.00	$859.00
Materials	Pump, < 5 HP - Pump and motor, fixed cost	1	Each	$175.60	$175.60
Materials	Pump, < 5 HP - Pump and motor, variable cost	1.5	Horsepower	$229.73	$344.60
Materials	Aggregate, Gravel, Graded	2.4	Cubic yard	$24.76	$59.42
Equip./Install.	Truck, Pickup	2	Hour	$27.28	$54.56
Labor	General Labor	4	Hour	$21.56	$86.24
				Total Cost:	$2,377.25

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	$1,782.94	EQIP-HU	$2,139.53
EQIP-NOI	$1,782.94	EQIP-HUNOI	$2,139.53
EQIP-NOFEI	$1,782.94	EQIP-HUNOFEI	$2,139.53
EQIP-CCPI	$1,782.94	EQIP-HUCCPI	$2,139.53
EQIP-MRBI	$1,782.94	EQIP-HUMRBI	$2,139.53